

# Citrus Industry

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## GREETINGS

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# Citrus Insect Control

## For January 1951<sup>1</sup>

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LAKE ALFRED, FLORIDA

January is an excellent month to start the spray program for the control of rust mites and purple mites.

According to the reports\*\* of the past month from the different citrus areas, rust mites were found in 70 percent of the groves examined and purple mites in 65 percent of them. In general, the rust mite infestations were light to heavy and the purple mite infestations range from light to medium. The scale infestations appear to be more or less at a standstill.

### Purple Mites

Although in most of the inspected groves purple mite infestations were light, they should be controlled in the near future. As soon as the days become warm the mite infestations may increase very rapidly and cause a leaf drop. If the purple mites are controlled while there is a light infestation, no appreciable amount of leaf or twig injury will develop and the period of control will be longer than if the spray application is delayed until a heavy infestation builds up. It is important to have all mite sprays containing DN applied before the spring flush of growth since DN materials are very toxic to young foliage.

### Rust Mites

It is economical as well as good practice to keep rust mite infestation at a low level during the winter. Even though the fruit has been picked the rust mites should be controlled. There are several rather important reasons for this. Heavy rust mite infestations on the leaves and the green twigs may cause a very heavy leaf drop similar to the leaf drop caused by purple mites. Also heavy rust mite infestations on the leaves causes "greasy spot." Leaves affected by "greasy spot" fall prematurely and in some cases the leaf drop has apparently been severe enough to prevent the set of a normal crop of fruit. Another important reason for controlling rust mites in January or early February is to reduce their abundance so that heavy

infestations will be less likely to develop during the spring. If there is only a light infestation during the post-bloom period there is then little chance of early rust mite injury on the fruit before the spring application of sulfur can be made. The period of control following the dormant and spring applications is often longer if the sulfur is applied while the infestation is light.

### Spray and Dust Recommendations For Mites

The most effective control of rust mite and purple mite is obtained with a combination spray containing wettable sulfur and either DN Dry Mix or DN111. Zinc is often included in the dormant spray for nutritional purposes and can be added to the wettable sulfur — DN combination. If zinc sulfate is used, only one third pound of lime should be used to neutralize each pound of zinc sulfate. An excess of lime causes the DN to be less effective so that weighing should be done very carefully. If scab is to be controlled on Temples and on grapefruit in the coastal areas, a neutral copper can be used with the zinc — wettable sulfur — DN combination. Magnanese is also used in the sprays in groves grown on alkaline soils. If DN is needed in a spray where any of the three nutritional elements are used, it is advisable to use neutral or basic compounds of copper, zinc and manganese so that hydrated lime will not be needed.

A DN-sulfur dust may be substituted for the wettable sulfur — DN spray but dust applications are not effective as sprays. Thorough coverage of all foliage with either dusts or sprays are necessary for satisfactory control of purple mites and rust mites.

### Purple Scale and Florida Red Scale

Due to the possibility of cold weather it is not advisable to attempt scale control in January or early February unless the grove is very heavily infested. However, in an occasional grove it may be necessary to control scale.

Parathion (15 percent) at two pounds per 100 gallons is the most practical material to use in the combination nutritional sprays. It should

be kept in mind that parathion is not very effective when applied during cool or windy weather so it should be used during a period when the temperature is going to above 70° for several days. If parathion is to be used with copper, zinc, or manganese, the neutral compounds should be used. If an oil emulsion is used the application should be made as late in the winter as possible just before the growth starts. Cold periods sometimes occur during January and February which may cause severe injury to the grove if it has been sprayed recently with an oil emulsion. It should be stressed again that unless the grove is heavily infested it is probably advisable to follow this with a summer application of scalecide to keep the scale population at a satisfactorily low level.

For more specific information consult the Florida Citrus Experiment Station at Lake Alfred or Fort Myers.

## Florida Leads All In Citrus Canning

From Florida's groves, which annually produce more than half of the nation's oranges, grapefruit and tangerines, came nearly 87 per cent of the citrus fruit canned in the United States during the 1949-50 season, according to figures just compiled by Florida Canners Association headquarters.

Florida's big share of the national pack was completed early in the Summer, but the smaller California operation is just now winding up with waning days of the Valencia orange season on the Pacific Coast, C. C. Rathbun, Executive Secretary of the Florida Canners Association, explained. Meanwhile, a number of Florida processors have started work on the new 1950-51 crop of fruit, and others will join them in the field between now and the first of the year.

The 50 firms which are members of the Association for the 1950-51 season represent 100 per cent of Florida's processed citrus production.

(Continued on Page 12)

(1) Written December 21, 1950.

\* Reports of surveys by Harold Holtsberg, Cocoa; J. K. Enzor, Jr., Tavares; K. G. Townsend, Tampa; and J. B. Weeks, Avon Park.

## Crate Dumping Mechanism Reduces Bruising, Speeds Packing

A new crate dumping device which reduces bruising and speeds packing has just been developed, which it is believed will be applicable to the handling of various fruits and vegetables. While the initial tests have been made with apples, it is believed that the device may be quite as successfully used in the handling of citrus and other fruits. It is described as follows by the United States Department of Agriculture Research Department:

### Apple Crate Dumping Mechanism Reduces Bruising, Speeds Packing:

Bruising of apples was reduced 60 to 70 percent as compared with normal hand dumping by use of a low-cost, dependable mechanical crate dumper developed for use in commercial fruit packing houses by agricultural engineers of the U. S. Department of Agriculture in cooperation with the Michigan Agricultural Experiment Station.

Hand lifting and dumping field-filled apple crates onto the receiving belt in commercial packing plants has long been one of the hardest and most tiring jobs in the entire apple packing procedure. Because of the difficulties of hand dumping, apples often average a quarter-inch bruise apiece in this one packing step. The dumper also starts the apples down the production line and, as a result, paces the rest of the plant's workers. Inexperienced or fatigued hand dumpers can easily force a slowdown or cause sporadic work by the rest of the employees.

The experimental mechanical dumper eliminated much of this damaging human factor by allowing the apples to flow onto the receiving belt at belt level and in a single layer. It was easy for the operator, using the dumper mechanism, to supply the packing line with a constant, uniform flow of fruit. The spring and lever advantage of the dumper enabled the operator to dump more than 200 bushels of apples an hour—well above the 100 bushel-per-hour production line speed maintained by many commercial plants. The

(Continued on page 12)

● Whats to come  
in '51 ???



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## Effect Of Storage Upon Citrus Molasses

### INTRODUCTION

Citrus molasses, which has become a familiar livestock feed in Florida has been produced commercially for less than ten years. Its wide acceptance and increasing popularity warrant more complete understanding of its physical and chemical properties. Buyers of this carbohydrate concentrate are interested in obtaining further information regarding the product, storage changes, and the ramifications of microorganisms associated with it.

Citrus molasses is produced from the rinds and pulp of citrus after the juice has been expressed. This waste residue is chopped, limed, and pressed to yield a press liquor of 10°-14° Brix (percent soluble solids content by weight) which when concentrated to 72°-75° Brix is the final molasses. Since citrus molasses can be produced only during the processing season, the processor is required to store millions of gallons to serve the year round needs of cattlemen. Certain changes take place during storage and they are the subject of this report to industry.

Before discussing storage changes in citrus molasses it might be well to examine Table 1 wherein the comparative analysis between this

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product and the common molasses obtained from sugar refining is presented. The average analysis for clarified citrus molasses represents samples made from several varieties of both grapefruit and orange. Clarified molasses refers to a product made from a clear press liquor. It is immediately noticeable that blackstrap is generally concentrated to a higher degree Brix, but has the disadvantage of having more than a proportionately higher ash content. Citrus molasses producers tend now to use 72° Brix as a minimum value with the average being maintained at a higher level.

**Sugar Losses and Instability During Storage.**—In storage, citrus molasses has been found to slowly undergo both a physical and chemical transformation. Of paramount importance are the changes in sugar content which occur on storage. When ten samples of citrus molasses collected from ten commercial processors in January of 1948 were reanalyzed by the Lane-Eynan Volumetric procedure they were found to have lost an average of 1.7 percent total sugars per year of stor-

age. Similarly, 13 samples collected in April of 1948 from 11 producers were found to have lost an average of 3.2 percent total sugars per year of storage. In contrast, however, are 13 samples of clarified citrus molasses made in the laboratory from different varieties of both grapefruit and orange that showed an average increase of 0.4 percent total sugars per year of storage. These clarified citrus molasses samples precipitated considerable insoluble matter during storage and since only the supernatant liquid was analyzed it is understandable that the percent total sugars could increase even in the face of a slow deterioration of sugars during storage. Table 2 summarizes these data showing maximum and minimum values as well as a comparison of sugar losses noticed in blackstrap during storage. Owen (6) investigating the deterioration of blackstrap found that those samples having the highest total sugar values were most susceptible to actual deterioration in storage. Upon examining each of the 3 groups of citrus molasses samples previously mentioned, it was noted that within

\*Presented before the Florida State Horticultural Society in Winter Haven, Florida, November 1, 1950.

Table 1. Comparative Data on Citrus and Blackstrap Molasses.

Analysis	Commercial <sup>1</sup> Citrus Molasses	Clarified <sup>2</sup> Citrus Molasses	Louisiana <sup>3</sup> Blackstrap	Cuban <sup>3</sup> Blackstrap
Brix <sup>0</sup>	72.0	73.1	90.7	87.2
Sucrose %	19.6	26.1	30.1	37.3
Reducing Sugars %	22.9	24.9	26.4	16.6
Total Sugars %	43.5	52.4	58.0	55.8
Carbonate Ash %	4.7	3.0	10.8	10.9
Nitrogen % X 6.25	4.1	3.6	1.6	2.1
pH	5.0	5.9	5.7	5.5

<sup>1</sup> Average of 36 samples.<sup>2</sup> Average of 16 samples (laboratory prepared).<sup>3</sup> Fort (3). (See literature cited).

each group this same correlation generally held true for citrus molasses. The clarified samples of citrus molasses, however, did not deteriorate with the rapidity expected for their high total sugar content and is probably accounted for by the removal during clarification of some colloidal unstable organic substances contributing to this deterioration.

Although there has been a loss of total sugars in each of the commercial citrus molasses samples during storage, the corresponding change in degree Brix is so small as to be insignificant, being but a fraction of the percent total sugars lost.

multiple volume that is greater than the storage space available. All attempts to correlate this instability with some other chemical or physical analysis have been futile to date. Owen (6) corroborates this and further states regarding blackstrap "that actual deterioration involving loss of sugars is accompanied by gas evolution, but it is also true that the latter cannot be taken as an indication of the destruction of sugars." Manometric measurement of gas evolution from various citrus molasses samples was similarly found not to correlate with loss of sugars. This gas formation in citrus molasses can also be found in concentrated orange

as the Maillard reaction. When various chemicals were added in small quantities to citrus molasses under manometric observation it was noticed that formaldehyde, though impractical to use, mitigated gas formation, and that pH changes on the acid side had little effect.

While studying this spontaneous foaming it was noticed that certain commercial citrus molasses samples had shown sub-surface gas formation during the first months of storage. When these samples were disturbed they tended to foam more readily much like a carbonated beverage. Analysis of a citrus molasses sample from a tank foaming excessively showed no sig-

Table 2. Comparison of Sugar Losses During Storage of Citrus Molasses as Compared with Blackstrap.

Description of Sample	No. of Samples	Type of Value	Change in Total Sugars per Year of Storage (Calculated %)
Commercial Citrus Molasses Jan. 1948	10	Average	-1.7
		Maximum	-3.4
		Minimum	-0.6
Commercial Citrus Molasses April 1948	13	Average	-3.2
		Maximum	-7.7
		Minimum	-1.3
Clarified Citrus Molasses	13	Average	+0.4 <sup>1</sup>
		Maximum	-1.8
		Minimum	+1.4 <sup>1</sup>
Blackstrap <sup>2</sup> , Factory No. 1	1	—	-6.3
Blackstrap <sup>2</sup> , Factory No. 2	1	—	-11.9
Blackstrap <sup>2</sup> , Factory No. 3	1	—	-11.3

<sup>1</sup> Actually increased in percent total sugars (See text)<sup>2</sup> Owen (6)

The froth fermentation or spontaneous foaming of molasses has been the subject of much inquiry, for even though it happens infrequently, it can be a serious economic loss. This phenomena occurs when molasses spontaneously heats to such high temperature as to "boil" and foam out of its storage tank leaving but a charred mass. Usually the molasses foams to some

juices and was investigated by Curl (2) who studied syntehtic mixtures and found that mixtures of amino acids and sugars produced darkening and gas which was further accelerated by certain metallic ions. Hucker and Brooks (5) also demonstrated that gas is produced by mixtures of nitrogen compounds and glucose, a reaction which is more commonly known

nificant difference from other samples on hand. This particular storage tank was finally controlled by aeration which may have helped only by its agitation action on the surface foam, and it follows also that the reaction may already have spent itself. It appears significant that of twenty samples of clarified citrus molasses made in the laboratory only two have shown any sign

of sub-surface gas formation and both of these samples had an excessive precipitation of insolubles during storage. None of these samples showed any sign of surface foaming and they have the further advantage of having a less stable foam system. Among the conditions contributing to stable foams, are high viscosity and finely divided solids, both of which have been reduced by clarification. Hucker and

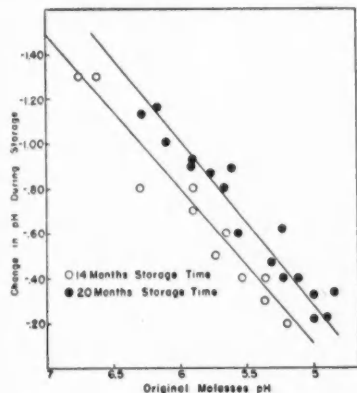


Fig. 1 — A scatter diagram comparing the change in pH of clarified citrus molasses after 14 months storage versus the change for commercial citrus molasses after 20 months.

Brooks (5) have demonstrated that high viscosities tend to increase the chances of spontaneous foaming and that high storage temperatures further aggravate this condition with 40°-45°C. being a critical temperature range.

Many explanations of froth fermentation have been advanced over the years, but most agreement has been found in two theories; one, the glucic acid theory which is favored by Browne (1) and relates that the action of lime on invert sugar produces unstable organic substances that further reacts with invert sugar. The second is the Maillard theory whereupon it is believed that the source of gas formation is the reaction between amino acids and invert sugar. Hucker and Brooks (5) seemed to have definitely established that microorganisms can be considered a minor cause.

#### Influence of pH During Storage.

—Although the initial pH of a citrus press liquid is almost entirely controlled by the quantity of hydrated lime added to the chopped citrus peel, there are certain other factors to be considered in arriving at the final pH of a citrus molasses sample in storage. Attempt should

be made to control the initial pH of citrus molasses between the limits of 6.0 to 6.5 with due thought given to the destructiveness and other inherent disadvantages of excessive alkalinity on sugars. Consideration must be given by processors to the corrosive and destructive influence of a too acid molasses on storage equipment. It is generally realized that grapefruit peel demands a greater quantity of lime than orange, however, during processing and upon prolonged heating it is to be further noted that both citrus press liquor and molasses will decrease in pH. This decrease in pH averaged one unit for 14 samples that were processed to citrus molasses in the laboratory. During storage there is a further drop in pH of citrus molasses samples. The decrease in pH appears to be dependent upon both the time of storage and the pH of the sample at the time it was put in storage. Figure 1 is a scatter diagram of 11 samples of

sugars in citrus molasses is definitely related to the pH of the processed molasses. As was similarly found in the analysis of Valencia orange juice by Roy (7), the lower the pH the greater the ratio of reducing to nonreducing sugars. In storage it was noticeable that almost without exception the percent of total sugars as invert sugar had increased with there being a tendency for the samples having the lower pH to show the greater percent change.

In studying the clarification of citrus molasses it was found that in storage clarified molasses precipitated considerable insoluble matter and that variations in pH between 4 and 8 did not perceptibly decrease the quantity precipitating. It is also to be noted that pH could not in any way be correlated with sugar losses, or spontaneous forth-coming of citrus molasses.

#### Physical Changes During Storage.

—It has undoubtedly been previously recognized that citrus molasses upon storage tends to increase in viscosity, sometimes appearing to gel, but hitherto an explanation has been lacking. This increase is strikingly seen in Fig. 2 in which is plotted the viscosities of 18 samples of commercial citrus molasses after over one year of storage against their Brix, versus 11 samples of commercial citrus

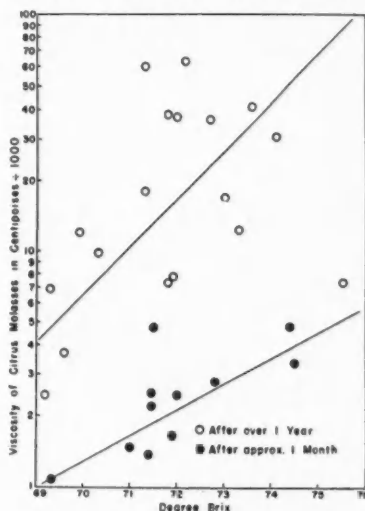


Fig. 2 — A scatter diagram comparing the viscosity at 30°C. of citrus molasses samples stored for over one year versus samples that had been in storage approximately one month.

clarified citrus molasses stored for 14 months and 17 samples of commercial molasses that have been stored for 20 months, wherein the change in pH during storage is plotted against its pH at the time it was put in storage. Below a pH of 4.5 the decrease in pH with time is of smaller magnitude than would be anticipated from this figure and would appear to be approaching a point of little change.

Prior to storage the quantity of total sugars found as reducing

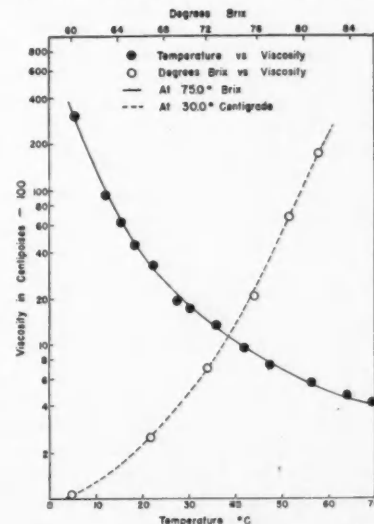


Fig. 3 — Influence of concentration and temperature upon the viscosity of citrus molasses.

molasses that had been in storage only one month. The regression lines show a considerable increase in viscosity with time. Four other molasses samples whose Brix were

between 68° and 73° had solidified and were not shown in this diagram. The wide variation of viscosities for samples of similar Brix is largely due to the quantity of suspended insolubles present. When the viscosities of many clarified molasses samples were plotted in similar fashion against those of non-clarified citrus molasses by Hendrickson (4), the regression line for clarified molasses showed its viscosity to be seven times smaller and showed less viscosity variation between samples. The influence of temperature and Brix upon the viscosity of an excellent sample of commercial citrus molasses prior to storage can be seen in Fig. 3.

Since the insoluble matter is mostly responsible for the wide variations in viscosity, it is well to examine the source of insolubles. Prior to concentrating citrus press liquor to citrus molasses it has been noted as having anywhere from 0.2-0.5 percent by weight insoluble matter depending upon how it has been screened and the degree of liming. During the process of evaporation another one to three percent, on a citrus molasses basis, of calcium organic salts are estimated to precipitate. In storage a considerable quantity of insoluble matter has been noted to precipitate which is especially noticeable in clarified citrus molasses samples. A greater quantity of insolubles was found to precipitate from clarified grapefruit molasses than from the clarified orange samples with one sample of grapefruit molasses precipitating 5.6 percent insolubles by weight, two-thirds of which was soluble in alcohol. It is not strange then for the amount of insolubles to build up to a rather high percentage. For example, one commercial molasses sample that had solidified was observed to have 9.6 percent insolubles.

Examining more closely the voluminous quantity of insolubles precipitating from grapefruit molasses samples it was noted that the majority of insolubles were crystalline and appeared as clusters of needles growing from common centers. In Fig. 4 is shown a photomicrograph of these crystals which were subsequently identified as naringin. The very bulkiness of these crystalline needle formations, as well as the quantity of it, and the percent of calcium

organic salts precipitating in storage points to the cause of increasing viscosities in storage. By heating the citrus molasses the naringin crystals will, by virtue of their increased solubility, go back into solution and remain as a supersaturated solution for some time. Hesperidin has not been isolated from orange molasses to date.

#### Conclusions

In retrospect, citrus molasses was found to lose an average of 2-3 percent total sugars per year of storage while clarified citrus molasses showed little if any loss. There was little change in degree Brix of these samples, being but a fraction of the sugar loss. Those molasses samples having the highest total sugars appeared most susceptible to loss of sugars in stor-

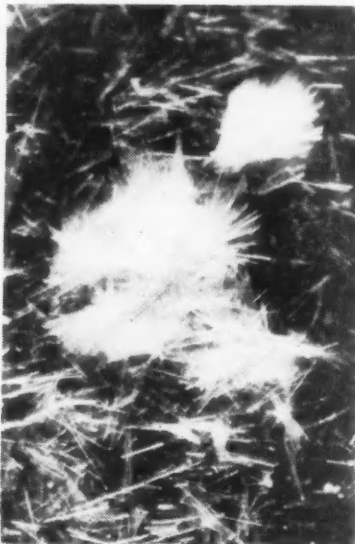


Fig. 4 — A microphotograph of naringin in citrus molasses. (Magnified 90 X).

age although other unknown factors would appear to be equally important. The spontaneous foaming of citrus molasses was investigated, but could not be correlated with any chemical or physical analyses. Clarified citrus molasses, however, showed a perceptible improvement in stability.

The pH of citrus molasses was noted to decrease with time and was greatest for those samples having the higher pH. Below a pH of 4.5 the samples appeared to approach a point of little change. The ratio of reducing to non-reducing sugars was found dependent in part upon pH and there was a tendency for samples having the lower pH to show the greater

increase in percent inversion.

During storage, there was an increase in viscosity which was felt to be caused by the quantity of insolubles precipitating. Upon closer examination some of the insolubles were found to be naringin which crystallized in needle fashion while another portion was found to have considerable calcium content. Upon heating, the naringin is redissolved and remains in solution for a considerable length of time. The viscosity of the molasses sample meanwhile will have been greatly reduced, allowing more ease in handling the product.

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"A Study of the Citrus Industry of Spain" has just been published by the U. S. Department of Agriculture. The publication, *Foreign Agriculture Report No. 56*, was written by J. Henry Burke, marketing specialist of the Office of Foreign Agricultural Relations. It is based on the author's first-hand study in Spain, conducted under the Research and Marketing Act, and is the first study of the Spanish citrus industry completed by the Department since 1925. Spain is the oldest citrus area supplying Western Europe and is traditionally the largest source of oranges for the winter Market in Western Europe. Copies of the report may be obtained from the Office of Foreign Agricultural Relations, U. S. Department of Agriculture, Washington 25, D. C.,



# Dooryard Plantings Of Citrus Trees

This publication has received numerous requests from newly acquired residents of Florida for information in regard to dooryard or other small plantings of citrus trees. We know of no better way in which to convey this information than by printing here the suggestions made by Dr. A. F. Camp, Director in Charge of the Citrus Experiment Station at Lake Alfred, which was first published in the booklet "Citrus Industry of Florida" issued by the State Department of Agriculture. While these suggestions were first made some years ago, they are quite as applicable today and may be followed with confidence by newcomers to the state. They are printed herewith:

## Dooryard Plantings

Dooryard plantings of citrus for home use are of particular interest to a great many people who have made their homes in Florida, and the information that is given for commercial groves is not always readily applicable to such small plantings. For that reason the following suggestions are made that may be useful to those who are interested in having a few trees in the yard.

## Varieties and Stocks

The first factor is, of course, the selection of varieties, and where several trees are to be planted this selection should be made to give a maximum length of season. The following suggestions are made, which may be useful to the householder attempting to make a small planting for his own use:

**Oranges:** In selecting orange varieties and where the number of trees makes it possible, the selection should be such as to give fruit throughout the normal season. The following listing will make such a selection easy. For early varieties, the Hamlin and Parson Brown; mid-season, Pineapple and Jaffa; and late varieties, Valencia and Lue Gim Gong. A selection of one variety from each of the three groups should give good fruit for approximately eight or

nine months of the year. For a description of these varieties, the section on varieties in this bulletin may be consulted.

**Grapefruit:** Seedy grapefruit is usually richer in flavor and higher in food value than the seedless varieties commonly favored on the market, but many growers prefer the seedless varieties because of the ease of preparation. For seedy grapefruit, however, two varieties are suggested, the Duncan, which is fairly early and the McCarty, which will hold quite late. These together with the Marsh Seedless would furnish grapefruit throughout the season.

**Pink Grapefruit:** Pink grapefruit is popular with many people, but the old varieties such as the Foster, which is very seedy, and the Thompson, which is seedless but has a very light pink flesh and no pink blush on the rind, are less desirable than some of the new varieties such as the Ruby, which is seedless and has a dark pink flesh, plus a pink blush on the outside of the fruit.

**Acid Fruits:** The Tahiti limes commonly grown commercially are a little difficult to grow, but with proper care can be made to do well in yards in warm locations. For home owners in cold locations the Meyer lemon is suggested as being very vigorous and free from disease. It is not a first-class commercial lemon because of its low acid content but is a very satisfactory home fruit and a heavy producer.

**Miscellaneous Fruits:** Many home owners desire to have available unusual fruits which are different from the common commercial fruits. The following are suggested for such plantings as having unusual flavor or appearance:

**Temple Orange:** The Temple orange is probably a natural hybrid between an orange and a tangerine, having a relatively loose skin so that it can be peeled and eaten from the hand, and a flavor that is exceptionally fine. The trees are a little more sensitive to cold than orange and grapefruit

trees, but the fruit is by far the best type of orange for eating from the hand grown in Florida, and this variety is highly recommended for home plantings.

**Tangelos:** These fruits are, for the most part, results of crosses between tangerines and grapefruit and partake to some degree of the qualities of each. The older varieties are very sensitive to scab and require careful copper spraying to keep them free from this disease. A number of newer varieties have been selected by the U. S. Department of Agriculture which are quite resistant to scab and of fine eating quality. For dooryard trees the Orlando orange and the Mineola are particularly recommended. These are highly colored and have a very tender flesh of exceptional quality.

**King Orange:** The King orange is a variety of mandarin which is large in size and has a loose skin. The tree is not decorative, but the fruit is different and unusual and preferred by many people.

**Calamondin:** The Calamondin is used mostly as an ornamental tree as it is a very compact upright tree with deep green foliage. The fruit is small and tangerine shaped, very sour, and is used as a substitute for limes and lemons. It is a very beautiful dooryard tree during the winter when it is bearing a heavy crop of fruit.

**Kumquats:** Kumquats are commonly used for ornamental purposes and also as a marmalade or conserve fruit. The common variety is the Nagami, which has an orange-colored oval fruit about one inch long. The trees are dwarf and compact and make very fine ornamentals. The fruit makes an excellent marmalade or conserve. A round variety known as the Marumi is now little used, but makes an excellent tree for roadside plantings.

The stocks which should be used are always somewhat of a problem. For light sandy soils probably the best stock is the rough lemon and for heavy soils the

sour orange. The sour orange stock will produce a slightly smaller tree but on light soils will be a little harder to keep in good condition. The quality of fruit on the sour stock will be a little superior to that on rough lemon under identical conditions, and where growers wish an outstanding quality of fruit it would be desirable to use sour orange stock, although it is somewhat more difficult to grow than rough lemon. Since much of the answer to the quality problem lies in the fertilizer methods, particular attention should be given to the following section.

#### Fertilizing and Spraying

Much of the difficulty experienced by growers of dooryard citrus trees is due to the fact that the citrus trees have radically different fertilizer requirements from lawns and shrubbery, but usually receive the same fertilizer used on the remainder of the yard. A good citrus fertilizer should contain not only nitrogen, phosphorus, and potash but also magnesium, manganese, and copper; whereas ordinary lawn and shrubbery fertilizers contain only the first three elements. Fertilizers for ornamentals also commonly contain a large amount of nitrogen in proportion to other materials, and such fertilizers are usually unsatisfactory for citrus trees.

Yellowing of leaves on citrus trees while the fruit is maturing, splitting of fruit in the fall, and the insipid taste of the fruit commonly reported by owners of dooryard trees, have their origin in failure to use the last three elements mentioned above; namely magnesium, manganese, and copper. The lack of magnesium is evidenced by a yellowing of leaves close to the fruit during August, September, and October while the fruit is maturing, and is due to the transfer of magnesium from the leaves to the fruit. Splitting of fruit in the fall following periods of rainy weather is also directly related to the lack of magnesium, manganese, and copper, and particularly the latter. The utilization of copper is in some way related to the utilization of nitrogen, and where large amounts of nitrogen are used they must be offset by correspondingly high applications of bluestone (copper sulfate). Lack of copper also results in fruit with an insipid taste, due to insuffi-

cient acid, excessive drying out of the fruit, often before it becomes fully ripe, and sometimes in gummy excrescences on the peel of the fruit and gum around the seed. Copper deficiency is the commonest trouble reported by owners of dooryard trees, due to the fact that such trees usually receive excessive amounts of nitrogen and no copper sine, unlike trees in commercial groves, yard trees are not usually sprayed with copper to control disease.

It is usually impossible to spray dooryard trees under a regular spray schedule because equipment is not available and because one type of spraying entails the utilization of other types also. For instance, spraying with either zinc or copper, as is commonly done in commercial groves, will entail an oil spray to control scales which are encouraged by applications of zinc or copper. Those who have adequate spraying equipment are referred to the spray schedule published each year by the Florida Citrus Commission. It is suggested that they follow Schedule B, except in areas where scab is severe. In those areas Schedule A can be followed for grapefruit. Otherwise, it is presumed that growers of dooryard trees will not use any sprays except oil as necessary for scales, and the following suggestions are based on this supposition.

1. Fertilization. Do not use ordinary lawn or shrubbery fertilizers on citrus trees. Obtain from a company manufacturing citrus fertilizers a mixture analyzing about as follows:

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO
3	8	8	3
(Water Soluble)		MnO	CuO
		1	1

It is not necessary to obtain exactly this mixture, but the content of magnesium should be the same as the content of nitrogen, and the content of copper should be at least one-fourth the content of nitrogen. A good mixture, which is usually easily obtained, is as follows:

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Mgo
4	6	8	4
(Water Soluble)		MnO	CuO
		1	1

It is usually better to buy a stock of this, sufficient to last over a period of one or two years and keep this for citrus trees only, and avoid using any of the ordinary lawn and shrubbery fertilizers

for citrus trees. Three applications per year should be made at about the following periods: January or February, May or June, and October or November. Do not use excessively large applications because a citrus tree, in order to produce good quality fruit in quantity, should not be excessively vegetative, but preferably a little on the "hungry side" as compared with the type of growth usually desired in shrubbery. It is difficult to give exact figures on the size of the application but a fairly good rate is one pound of fertilizer per application per year of age up to ten years and after that an additional half pound for each additional year of age. For example, a 12-year-old tree would receive 11 pounds per application.

This fertilizer should be spread under the tree and to about three feet beyond the spread of the branches, and worked in with a hoe so that it will not wash away when heavy rains occur. Working it in with a hoe is also desirable, as there is a tendency in the sandy Florida soils for the soil to become excessively dry under the tree so that it will not wet when it rains. Stirring it with a hoe helps to prevent this condition.

If trouble has been experienced during the previous year with splitting, it may be desirable to apply to the trees during the winter a pound of coarse granular bluestone. (Do not use bluestone snow or extra fine crystals.) Spread this bluestone under the tree and for about two or three feet beyond the spread of the branches. If chickens are running in the yard, it may be desirable to hoe this application into the surface of the soil, as they will sometimes eat the bluestone crystals.

In areas where the soil is alkaline, and this is likely to be true in the coastal areas and particularly in areas in the lower east coast, it will be desirable to obtain a fertilizer with a higher percentage of manganese. It is suggested in this area that the fertilizer contain 2 percent of manganese instead of 1 percent recommended generally throughout the citrus belt.

2. Culture. Usually some difficulty is experienced in yards from competition with other plants which tend to send roots under a citrus tree and rob it of fertilizer.

Also the presence of lawn sod under the tree prevents the downward penetration of fertilizer, and the grass will rob the tree of any fertilizer applied. It is better to keep the ground under the tree for two or three feet beyond the spread of the branches cultivated or mulched, but if this is undesirable and fertilizer must be spread over a lawn grass it should be watered in as otherwise it is likely to burn the grass. Do not apply fertilizer on a dry lawn, but wait until it rains or water the lawn before making the application. If kept cultivated throughout the year, grass clippings, weeds, and other organic materials should be thrown under the tree occasionally and chopped in with the hoe in order to keep up the organic matter content of the soil. The soil, if desired, may be mulched with grass and weeds and other material from the yard, in which case the amount of fertilizer used will have to be somewhat reduced and occasional applications of bluestone made. The fertilizer can be applied on the mulch as it will be covered up by additional mulch. Where trees are heavily mulched with organic matter it will be desirable to watch them very closely. If they show any signs of excessive growth, immediately make an application of granular bluestone at one-half to one pound per tree, depending upon the size of the tree.

3. Spraying. Where the appearance of the fruit is not important, spraying may be entirely omitted, in which case a considerable percentage of the fruit will probably be marked by rust mite to form a dark brown, very smooth marking on the skin of the fruit. This does not injure the inside of the fruit, but it does reduce the size somewhat, and if the fruit is held into the early summer it may dry out underneath the brown marking, since the rust mites have destroyed the cuticle on the surface of the fruit and increased evaporation through the rind at that point. This can be avoided quite easily by occasional dusting of trees with sulfur dust after blooming, and additional applications should be made at about six-week intervals. This will keep down the rust mites to the point where there will be very little rusty or russet fruit as it is sometimes called. If only sulfur dusting is done, it may not entail

any other spray operations; but if copper or zinc is used in a spray as is done in commercial groves, oil spraying will be a necessary operation in order to cut down scales. The ordinary grove receives a dormant spray of zinc sulfate and sulfur, a post-bloom spray of copper and sulfur, an oil spray in June, and another ap-

plication of sulfur in the fall or late summer. Such a spray schedule is out of the question with most yard trees, and insect or disease control is usually limited to the application of a little sulfur with a hand duster.

When trees are shaded by the house or other trees or shrubbery, scales will frequently become

## ★ How **MAGNESIUM** helps you get profitable production of crops ★

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Water-Soluble

DOUBLE SULFATE OF POTASH-MAGNESIA

Many soils are deficient in magnesium due to heavy cropping, leaching, lack of sufficient farm manures and reduction of magnesium content in modern fertilizers.

Leading fertilizer manufacturers are finding that it pays to include magnesium in their mixtures and are using *Sul-Po-Mag* as the most practical and economical means of supplying quick-acting water-soluble magnesium. *Sul-Po-Mag* is a natural combination of magnesium and potash and is used in mixed fertilizers in the correct amount for your individual crops. It is often used for direct application where crops require additional amounts of magnesium and potash.

#### **This is why growing plants must have magnesium**

- ★ It is required in the life process which gives plants their green color and keeps them growing.
- ★ Promotes earlier maturity on soils low in magnesium.
- ★ Enables crops to make better use of other plant foods.
- ★ Carries phosphorus to the growing and fruiting parts of the plant.
- ★ Necessary for the development of seed.
- ★ Promotes the formation of proteins in growing crops.
- ★ Stimulates growth of soil bacteria and fixation of nitrogen by legumes.
- ★ Increases the plant's resistance to diseases.

You will find that *Sul-Po-Mag* in your fertilizers or used for direct application will help you get earlier maturity, healthier growth, improved quality and larger yields of citrus and truck crops.



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**Ask for a Fertilizer containing *Sul-Po-Mag***

serious. In this case the trees will have to be sprayed thoroughly with oil emulsion at a concentration of about 1½ percent actual oil in the spray mixture. Commercial emulsions can be obtained from seed and fertilizer dealers in your local community and used according to directions on the container. It should be remembered, when spraying with oil to control scales, that only those scales are killed which are thoroughly wet with the oil, and the application must be made thoroughly to the backs of the leaves as well as the tops, and to the twigs and branches.

Where copper sprays are not used for disease control, fair but not commercial control of melanose can be accomplished by keeping the dead wood thoroughly pruned out of the tree. In yard trees it is well to go through the trees two or three times a year and prune out the dead wood thoroughly in order to reduce the amount of rough, brown melanose markings on the fruit.

#### CRATE DUMPING MECHANISM REDUCES BRUISING, SPEEDS PACKING

(Continued from Page 4)

operator also worked without tiring as he did in hand dumping the apples.

The dumper itself operates from a platform holding the full apple crates. For most efficient use the full crates are brought to the dumper on a roller conveyer at dumper platform level. With a spring and lever arrangement the operator lifts the crate to receiving belt level and pivots it to dumping position. An adjustable, padded crate lid holds the apples in the crate while they are being positioned for dumping and then swings open allowing the apples to flow onto the receiving belt in a single layer. Brushes and the eliminator belt do their best work when fruit reaches them in a single layer. When the crate is empty, the operator swings it to its original position with the mechanism and removes it from the line.

The new dumping machine was operated daily during and after the 1950 apple season without needing alteration or adjustment, the research engineers report. Devised and tested in one phase of a project under the Research and

Marketing Act of 1946, it is expected to be commercially available to packing plants for the 1951 season. Plans for the new dumping device may be obtained from the Michigan Agricultural Experiment Station, East Lansing, Michigan.

The Department of Agriculture engineers believe this same type machine can be used in the commercial handling of other fruits and vegetables, such as peaches, pears, and onions. In fact, they feel it may be useful in handling any fruit or vegetable that is dumped from a field crate onto a packing line.

#### FLORIDA LEADS ALL IN CITRUS CANNING

(Continued from Page 3)

tion, including frozen and pasteurized concentrates, as well as canned single strength and canned sections and fruit salad, Rathbun said.

Florida's canners and concentrators, in the past season, used 34,510,220 boxes of oranges, representing 59 per cent of the state's commercial utilization; 13,431,710 boxes of grapefruit, representing

56 per cent of the crop, and 1,465,366 boxes of tangerines, about a third of the state's crop. In addition there was a small commercial pack of lime juice products.

The nearly 50,000,000 boxes of Florida citrus used by the processors during the past season represented about 80,000,000 bushels of fruit used in this channel.

Meanwhile Texas canners in the 1949-50 season used 2,500,000 boxes of citrus fruit (nearly all grapefruit), and California-Arizona canners will end their season shortly with utilization of approximately 4,900,000 boxes of citrus fruit, principally oranges, Rathbun said.

#### JUNIOR AGRICULTURAL FAIR WELL ATTENDED

More than 7,500 girls and boys participated in the fifth annual Junior Agricultural Fair held at the Strawberry Festival grounds in Plant City November 17-18. Youth groups participating were Future Farmers of America, Future Homemakers of America, 4-H boys and girls clubs of Hillsborough County and the Boy Scouts.

## In The New Year Of 1951

As in every year the health of your trees governs to a major extent the quantity and quality of your crops. Florida Favorite Fertilizers are building and preserving health in citrus trees all over the citrus belt.

Don't forget . . . we deliver our fertilizers to our customers in our own fleet of trucks.

**Florida Favorite FERTILIZER, INC.**

Old Tampa Road

Lakeland, Florida



# Steps Of Progress In The Texas Citrus Industry

Florida citrus growers have been prone to think that they occupied a unique position in the industry, that their problems were greater and more complicated than those of citrus growers in other states. They have considered that California growers, long accustomed to cooperative effort, were unassailed by many of the ills which have afflicted Florida growers who finally came to cooperative effort the hard way. Many of them will be surprised to know that citrus growers in other sections, notably Texas, are looking to Florida as a model upon which to build their own cooperative bodies. Writing on this subject, J. H. Welch, editor of *Texas Farming and Citriculture*, says:

Thousands of citrus growers in the Lower Rio Grande Valley have worked long and zealously in their orchards, bringing the trees back to good production after a severe visitation of northern winter. Involved in the restoration have been tree-pruning and nursing, the spending of much money. But for 1950 these ministrations are of the past. Marketing is well under way. And the growers are looking forward to the profits they so richly deserve. Many have staked most or all of their financial resources on the success of their citrus ventures. These have given the Valley a glow throughout the United States for a host of people wishing to turn away from the crowds and turmoil and noise of big cities for homes where nature still holds sway with abundant crops reaching to far horizons.

The basic, creative phases of agriculture arouse instincts and childhood memories in many Valley residents who find much less appeal in crop marketing. They have had enough of business in the North. They have been drawn to the Valley by a deep urge to get back to the good earth to bring up grapefruit and orange trees, for instance, leaving to others the details of handling the fruit commercially.

There are, of course, plenty of these others—"cash buyers," packers, shippers, processors. Also, there are growers' cooperative packing and marketing organizations. But membership in the latter is not large enough in the Valley to give citrus marketing here the order and stability essential to a well conducted, profitable business operated on a national scale.

To provide the Texas citrus industry with these requirements a group of its most active merchandisers obtained about a year and a half ago the passage through the Texas Legislature of a bill creating the Texas Citrus Commission, which is composed of twenty-seven members authorized by law to perform certain functions important to the progress of the industry as a whole.

The commissioners were appointed by the Governor of Texas and then many details of organization came up for attention. These required considerable time. A few months ago the executive manager was selected. As most of the citizens of the Valley know, he is Jack Drake, who, though still a comparatively young man, has been prominently identified with public affairs in the Valley for nearly two decades, first a radio broadcaster, then successively, as executive secretary of the Texsun Citrus Exchange, the Mission Chamber of Commerce and the Valley Chamber of Commerce, which position he resigned to take up his present responsibilities.

That he realizes their weight and is fitted by ability and experience (Continued on page 16)



Want to know why more and more citrus growers, farmers and cattlemen are applying d/p Dolomite to their soil every year? Because that's the little something extra that pays off in EXTRA quality! And quality crops mean higher prices—better profits.

d/p Dolomite restores the acid-alkali balance to your soil and supplies quality producing magnesium and calcium. Because d/p Dolomite balances your soil, your fertilizing program yields far better results, too! Apply d/p Dolomite now!

Where cost is a factor in very large groves and acreage, lower-cost high calcium limestone and high calcium limestone screenings provide essential calcium at an economical price. Write us for details.

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# The LYONIZER

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## Reports Of Our Field Men . . .

### POLK COUNTY

J. M. (Jim) Sample

We have been very fortunate this season with very little damage from cold weather and with prices much better than they appeared as to what they would be during the very early part of the season. In fact, we are all satisfied at the present time and are hopeful that they will continue on an upward trend throughout the remainder of the season. While we have had a hard fight with scale and mites during the season, most growers have been successful in keeping these pests pretty well under control, and we have some of the finest fruit for shipment that we have had in a number of years. On the tree buyers are showing somewhat more interest in buying than they have heretofore this season and we think it is a sound indication that conditions will be better as the season progresses. Most of the packing houses are in operation and quite a volume of fruit is being moved at the present time.

### SOUTHWEST FLORIDA

Eaves Allison

Crops in this area have taken the worst treatment this fall that they have taken since the disastrous season of 1939-40. Hurricanes, high winds, floods and freezes have plagued the grower continually one after the other since Labor Day. Citrus alone has come through unscathed in this West Coast section. We have a very high quality crop of oranges and grapefruit at this time with soil and moisture conditions at their most favorable point. Tomatoes are still picking in spite of considerable damage to vines. Gladiola has been in short supply but more flowers are now in sight and quality is generally good. Celery crops are well ahead of most years in quality and the outlook is for a very fine market. We have been plagued with pests of all kinds on both citrus and vegetables but growers have done an excellent job of keeping these adversities under control.

### NORTH CENTRAL FLORIDA

V. E. (Val) Bourland

Packing houses are now running on a full time basis and as a re-

sult fruit is moving at a rapid clip. With fruit having been kept clean all season and now coloring is the best that we have seen in years, so this means that the consumer is getting some of the best tasting and best appearing fruit that it has had in a number of years. We are very glad to furnish this type of fruit to the people who pay for and eat our fruit. Fruit damage has been very light from the recent cold spell and we are hopeful that we can go through the remainder of the season without further damage. Young trees showed some damage to new foliage but this has not been severe and with the spring season they should come out and show no ill effects from the ravages of cold weather. Some tangerines were nipped but not severely and are at the present time moving to market in very good shape and at satisfactory prices.

### SOUTH POLK, HIGHLAND AND HARDEE COUNTIES

R. L. (Bob) Padgett

Our damage from the recent cold spell could have been a great deal more severe but as a whole we came through in fairly good shape. Citrus fruits were damaged very little except in the lowest cold areas, but vegetable crops in most of the territory were badly hurt. In Hardee county and at Lake Istokpoga we had a lot of damage and growers will have to start all over again. However, this has not been too discouraging as such things have happened before and a comeback made that resulted in profits for those that had a season average. We have had a very trying year as far as weather conditions have been concerned but we are still hopeful that the law of averages will take care of the situation.

### WEST CENTRAL FLORIDA

E. A. (Mac) McCartney

We have been through a pretty bad time and at this time, the middle of December, we cannot tell what is ahead of us. Vegetables in this section were hit hard by the freeze but citrus came through in much better shape. However it is still a little early to tell the extent of damage to small trees. I have checked a number of young plantings and in some cases find

the bark to be split, indicating that there will be some damage that is beyond visibility at this time. There is some damage showing up in oranges and tangerines but it is not nearly as bad as we at first expected, and if we do not have further cold and freezing weather we will be in good shape. We have been going forward with our fall application of fertilizer and the fertilizer applied at this time will assist in bringing back the vigor to trees and help set a good crop of fruit for next season.

### HILLSBOROUGH & PINELLAS COUNTIES

T. D. (Tillman) Watson

The outlook for Hillsborough and Pinellas counties from a citrus standpoint is very good. The recent cold weather killed practically all of the tender vegetable crops except the more hardy leafy vegetables of which the cold weather improved their quality. The lower spots in some areas where young trees were planted suffered some damage, but in most cases the trees will overcome this burn. Most growers are pleased with prices they are getting for fruit at the present time. Most packing houses are getting excellent quality fruit and the consensus of opinion is that prices will hold up well throughout the shipping season. Scale insects have been prevalent for a number of months but growers have done a good job of getting both scale and various mites under control.

### PASCO COUNTY

G. C. (George) James

Effects of the freeze have been the principal topic of discussion among growers for the past few weeks. It seems that the cold hit in two ways; first, a few of the most exposed areas on the tops of the hills were nipped by the cold blasts of air, and second, in numerous low areas the young trees lost their leaves when the wind died down and the cold air settled. The general consensus of opinion is that we were fortunate in escaping with so little damage. The continued low temperatures following the freeze undoubtedly helped to minimize the damage. General rains early in the month were beneficial to both injured and uninjured trees and also has enabled some of the growers to hold their early fruit in anticipation of better prices.

## ADVERTISEMENT — LYONS FERTILIZER COMPANY



Old Man Cold Weather has been leadin' the citrus industry a merry chase so far this season but the percentage of damage to crops and trees has been mostly minor. Prices has tended to increase durin' recent days and fruit buyers is showin' an interest now in fruit on the trees. This makes a healthy situation and there don't appear to be no reason why prices should not remain good for the balance of the season. Growers is naturally interested in better prices, which of course is determined for them by the returns they can git from the consumin' public.

Any time citrus trees has been damaged by cold weather or any other hazard of Nature it's mighty important to get them back in normal shape as soon as possible. So every grower should give serious concern to his fertilizer and spray program for the next few months. All fertilizer men is inclined to be plumb cooperative and they know what fertilizer and spray programs is needed to stimulate growth and vitality in your groves so that they'll put on a good bloom in the spring and stay in the healthiest condition possible.

The vegetable growers of the state has been hit pretty hard, with tender crops all over the state sufferin'. However, these vegetable men are a mighty alert group of folks and doin' all that can possibly be done to come back with another crop right soon. We've every respect for these growers and know that they'll have new crops ready for market at the very quickest possible time. Some of the hardier vegetable crops wasn't seriously damaged, and in some cases was benefitted by the cold weather, which was fortunate for those growers who'll be able to salvage a share of his crop and market it at good prices.

Cattlemen was hard hit by the cold weather as most pasture grasses suffered severe setbacks and this will mean that a lot of cattle raisers will have to buy feed for their critters. Recent rain, however, will help bring pastures back in a hurry when a little warm weather sets in.

We wish for everyone of you in Florida, whether citrus or vegetable grower or cattleman, a most successful year in 1951.

**Uncle Bill**

# STEPS OF PROGRESS IN THE TEXAS CITRUS INDUSTRY

(Continued from page 13)

ence to carry them well is made evident in a talk with Drake. He might be called "Valley Made" for his job.

Since he first sat down early in September to his daily duties in the Commission's offices in Weslaco he has examined with much care the needs of the Texas citrus industry for the current marketing season. Here are some of the findings.

"We face exceptionally heavy citrus crops in Florida and California, and to hold our own against this competition orderly marketing will be a must.

"For the first time growers and shippers are seeing eye to eye as to the benefits to all to be derived from a regulatory body that can prescribe grade and size regulations.

"The scarcity of rain this summer resulting in extremely dry weather, has caused unusually small fruit, and without size restrictions in shipments the probability is that our markets would be completely demoralized.

"It is an old practice in the Valley to begin to ship grapefruit and oranges in September, when most of the fruit is far from ripe. This should by all means be stopped. We propose to spend a large sum of money this season in telling consumers throughout the nation about the high quality of Texas citrus, but if the advertising introduces them to green fruit at any time they will want no more of it. They will walk away from it in the stores and warn their friends.

"So maturity standards for Texas citrus should be made higher. Present standards are no assurance that the fruit will be palatable, will pass the "spoon" test. If we deceive our customers in any way we lose them and lose more than the money we spend to win them. But if we strive to please them always we can do it with ripe Texas citrus, which has surpassing quality.

"Unity in marketing together with a fair deal for consumers and everybody in the industry, will make it one which will more than justify our expectations."

**Cites Florida as an Example**

Again looking to Florida as an example of what may be done to

better the condition of the growers, Mr. Welch goes on to say:

Big undertakings with high aims bring forth men qualified for leadership, and this has been notably true in the development of the Lower Rio Grande Valley. During nearly half a century of swift expansion here men capable of seeing something of the future in the light of the present have been transforming visions into actualities, marking out the Valley's course from a wilderness into one of the world's most productive agricultural areas, particularly in

grapefruit and orange growing, which has made the Valley a green and golden Mecca for people from many parts of the United States.

Generations of leaders pass; others follow. Always there is the call for new builders to strengthen foundations and elevate superstructures for coming years. Outstanding in the Valley among such builders are the members of United Citrus Growers. Their president J. J. Daniels, pointed out in a recent conversation some of the organization's objectives for the road ahead.

## Season's Greetings

*....and our sincere good wishes  
for a harvest of plenty  
in 1951.*

ZINC • IRON • MAGNESIUM  
MANGANESE • COPPER • plus BORAX

# NACO FERTILIZER COMPANY

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"The Texas citrus industry needs unanimity of thought and action," he said. "Our group of growers has moved forward aggressively, seeking to solve as we meet them problems pertaining to Texas citrus production as a business. Though still a young association, we have already gained much support.

"For instance, we have won virtually unanimous approval of a uniform citrus purchasing contract. The dealings between growers and buyers of citrus growers have in many cases been loose as to details, full of holes, open to misunderstandings and even to dubious practices. The new uniform contract is clear and definite and fair to all concerned. It has been endorsed by important organizations, and we regard it as a real step forward in bettering business practices in our citrus industry.

"Also, we are aiming at improvements in shippers' performance bonds and have other projects intended to make citrus marketing more economical and better stabilized for growers and all legitimate packers, shippers and processors.

"Citrus marketing is now under supply and demand pressure, and the Florida Citrus Mutual is in action with minimum price schedules to protect these divisions of the Florida citrus industry. Our United Citrus Growers are taking similar steps, urging Texas citrus interests to unite in such a way as to obtain the protection to which they are legally entitled and which they deserve.

"Under the Capper-Volstead Act and the Sherman Anti-Trust Act, both of which favor cooperation among agricultural producers, the shippers and processors are not able to keep a thumb on prices, since all are not cooperative enterprises. This difficulty has been encountered in Florida as well as in the Valley. Some fifteen years of continuous work in citrus industry organization there has prompted C. Walton Rex of the Rex-McGill Investment Company, Orlando, Florida, to state without equivocation:

"... We came to the conclusion that to try to divide the three separate groups, the so-called simonpure growers, the packers and the processors only tended to create hostile camps, with the inevitable result that we got farther and farther away from understanding one another's problems, and closer

to a battle royal. We then decided that we should take into our organization all the canners, processors, shippers who were also growers. "... A charter and by-laws were therefore adopted, making Florida Citrus Mutual basically a producer organization by giving it broad powers through the co-operative Marketing Act of Florida and in compliance with the Capper-Volstead Act. A requirement of membership is that a member shall be a producer, whether or not he

owns packing or canning facilities."

"The United Citrus Growers make no apologies," President Daniels continued, "for studying Florida Mutual when it comes to solving citrus industry problems. Our Florida friends have done considerable spade work and set precedents. Our big job is to apply the results to practices here in Texas. In some respects we have been in advance of Florida, but it would be foolish for us to neglect (Continued on page 18)

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**TO GET THE**  
*Best*  
**BOOK YOUR**  
*"Calcium Nitrate"*  
**NOW!**

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Now is the time to buy ALL of your Calcium Nitrate to be sure that you'll have it when you need it, and that your crops will benefit from the water soluble calcium and nitrate nitrogen.\*

Determine your needs for Fall, Winter and Spring, and order ahead. Bookings are being accepted now on a "first come, first served" basis, subject to the supplier's confirmation. Remember, you get quick acting nitrate nitrogen and water soluble calcium for the price of nitrogen alone — two plant foods for the price of one.

To get ALL of the Calcium Nitrate you will need, book your order early. See your X-Cel dealer or write direct.

\*Calcium Nitrate contains 15% Nitrate Nitrogen, 26% Calcium Oxide.

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- FERTILIZERS
- INSECTICIDES

FLORIDA

# Citrus Production Report As Of December 1, 1950

J. C. TOWNSEND, JR.,  
AGRICULTURAL STATISTICIAN, U.  
S. DEPT. OF AGRI., BUREAU OF  
AGRICULTURAL ECONOMICS,  
ORLANDO, FLORIDA

## FLORIDA

The late November cold wave brought low temperatures over most of the citrus belt. In extreme low locations, temperatures from 22 to 25 degrees were registered and although some damage was sustained, the overall total loss to the citrus crop will be small. Frozen fruit can be used by processors within a short time without loss of quality.

December first production indications point to little change from November. The early and mid-season orange crop is carried at 34 million boxes. Valencia prospects dropped a half million boxes to 27.0 million, while grapefruit and tangerines remained at 31.0 and 4.8 million boxes respectively. Harvest of fruit is seasonally on the increase. By the 10th of December about 10.5 million boxes of oranges and nearly 7.0 million boxes of grapefruit had been harvested. This compares with 10.2 million oranges and 3.3 million boxes of grapefruit to the same date last year. Processors have taken nearly 50% of the orange harvest to date and 3.0 million boxes of grapefruit. This compares with 4.7 million oranges and 1.0 million boxes of grapefruit used by processors to December 10, 1949. Tangerine movement is a little behind that of last year—about 600,000 boxes having been marketed by December 10, 1950.

**UNITED STATES**—The total early and midseason orange crop for the United States is forecast at about 51.6 million boxes as indicated by conditions December 1, 1950. This is only slightly larger than the 1949-50 crop of 51,295,000 boxes. The U. S. Valencia crop for 1950-51, estimated for the first time this year, is placed at 54,900,000 or about 5% above the 52,240,000 boxes harvested in 1949-50. The U.S. production of grapefruit is expected to fill about 48.5 boxes. This compares with the short crop of 36.5 produced last year but is nearly 2 million boxes smaller than the 10-year (1939-48) average.

Texas citrus sustained freezing temperatures the morning of December 7. Some fruit had ice in the stem end. Ruby red grapefruit and temple oranges suffered some damage. Other grapefruit and oranges are expected to recover with only slight loss. Trees were apparently not hurt. The forecasts of production are as of December 1 and do not take into account possible loss from the cold spell of the 7th.

Conditions were generally favorable for citrus during November except for lack of rainfall. A cold spell in mid-November and another in late November were not severe enough to damage citrus but did improve the quality of the fruit. During November the lower valley of Texas was the driest in years and irrigation water was becoming critically short. Trees, however, are in good condition. Oranges are forecast at 3.5 million boxes—twice the short crop of last season and about the same as the 1948-49 crop. Grapefruit are indicated at 12 million boxes compared with 6.4 million last season and 11.3 million in 1948-49.

Arizona weather was exceptionally warm during October and November, which hastened maturity of citrus fruits. An increase in price for the Navel oranges in late November resulted in rapid picking of Navels and a slower picking of grapefruit. Arizona grapefruit was estimated at 3 million boxes and oranges at 1¼ million.

California weather was warmer than usual during most of November. In the Sacramento and San Joaquin Valleys, the floods caused by the rain of November 17 to 21 apparently resulted in little or no damage to citrus fruit or trees and in many areas the moisture was beneficial. The wet weather interrupted the harvest of early Navel oranges. Rainfall in the important Southern California citrus areas has been light. California Navel and Miscellaneous oranges are indicated at 14.5 million boxes—7% less than last season. The first forecast of the season for Valencias is for 25.9 million boxes—2% less than the 1949-50 crop.

## STEPS OF PROGRESS IN THE TEXAS CITRUS INDUSTRY (Continued from page 17)

learning' all we can from their experience and work with conditions similar to ours.

"As a leading industry in Florida a great deal of money is involved in the prosperity or otherwise of citrus production there, so the Florida Bankers' Association has put its shoulders to the wheel. In 1948 the bankers reported in part as follows:

"A majority of the growers have not received in some recent years even the cost of their fruit production. . . . If ever there was an industry shot through with lack of confidence and suspicion of motives and intentions, it is the Florida citrus industry. There has been no coordination or control of the movement of fruit to markets. It has been a loose, sprawling, unorganized, sick and unhappy industry. There is nothing to lose and everything to win in organizing Florida Citrus Mutual."

In commenting on the bankers' vehement words President Daniels said that the Florida citrus growers had come along the hard way and had done much to set a historical precedent for unified thought and action in the marketings of fresh and processed citrus fruit. Here in Texas and in Florida," he added, "unification must continue to be a main objective. Panic selling must be headed off and quality controls enforced. All this calls for concerted work on the part of at least seventy-five percent of the owners of our citrus acreage concentrated in one organization that meets all legal and other requirements for establishing citrus growing and marketing on a base fortified for permanent strength and profit."

## Classified Ads

**CITRUS TREES** — Standard Commercial Varieties and Rootstocks. Information, Recommendations and Prices Furnished Upon Request. Clay Hill Nurseries Co., Box 2250, Tampa, Florida.

**\$600.00 BUILDS COZY 4 ROOMS and bath.** Concrete block. Stuccoed. Complete instructions \$1.00. Sagnaw Realty Agency, Box 992, Sagnaw, Mich.

**PEACH TREES**, Improved Jewel Variety for January-February 1951 Delivery. R. P. THORNTON, Box 2880, Tampa, Florida.

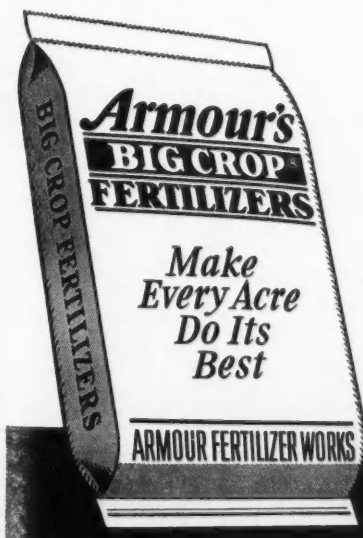


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In these days of high production costs and low prices, quality citrus fruit is an absolute necessity to grove profits. And the grower who gets quality fruit is the one who **CULTIVATES** quality in the fruit, from bud to harvest.

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Drop us a card if you'd like a visit from an Armour Field Representative. There's no obligation for his advice on grove fertilizing problems.



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